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ABSTRACT

The Ontario Student Loan Program has experienced problems with default on student loans, as have loan systems in other countries where governments rely mainly on banks and special departments of quasi-public institutions to monitor or police the borrowers. This report discusses the need for radical modifications of the student loan program to enable students and universities to tap more private funding and abolish the present means testing of student loans, and investigates trends in the level and structure of university fees. It offers a summary of changes in student assistance schemes in New Zealand and Australia, which incorporate use of the income tax machinery in the collection of loan repayments and the implementation of an income contingent loan system. The report presents simulations of outcomes of introducing an income contingent loan system, using different assumptions concerning rates of interest chargeable to students, the length of the repayment period, and the minimum income repayment threshold. The report concludes that full incorporation of the tax machinery into the loan collection process would substantially improve the operation of the loan program as it would allow borrowers to spread repayments over a longer period to accommodate fluctuations in their incomes. (Contains 32 reference notes.) (JDD)

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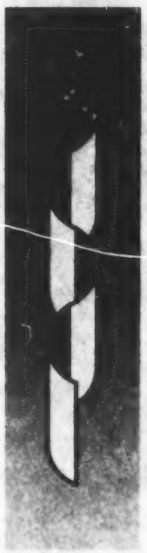
REFORMING ONTARIO'S UNIVERSITY

STUDENT LOANS AND FEE STRUCTURES

Discussion Series
- Issue 1 -



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REFORMING ONTARIO'S UNIVERSITY STUDENT LOANS AND FEE STRUCTURES

By
Edwin G. West
Carleton University, Ottawa. 1993.

Discussion Series
- Issue 1 -

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SUMMARY

Demand for places at universities is expanding in most countries at a time when the abilities of governments to provide the finance have become attenuated by deficits, over- commitments, and political interest group pressure for spending on alternative programs such as health, the environment and infrastructure. If the quality of education is not to fall substantially, new sources of finance must be developed quickly. One of these, student fees, have been rising in real terms throughout the world. This event in turn has called for new and imaginative ways of helping students finance these rising costs. With this in mind, most countries have already introduced, and are expanding, their loan systems. Those with fairly long experience with them have found that the default problem looms large especially where governments rely mainly on banks and special departments of quasi-public institutions to monitor or police the borrowers. The Ontario Student Loan Program's (OSL's) problems are no better than others in these respects. Significant improvement would come by using the income tax machinery for collection purposes. This would dramatically lower the default costs and make the loan program more viable and expandable.

The additional step of introducing the principle of income contingent loans would also improve efficiency. Everyone would pay back a set percentage of income once it rises above some minimum such as the average Canadian adult income. Such a system would allow borrowers to spread their repayments over long periods up to 30 years so as to accommodate fluctuations in their incomes. This is in contrast to the current OSL which is a mortgage type of loan requiring fixed payments at fixed and relatively short intervals, a feature that could well be encouraging many students to default under the present system.

The shift to the income tax machinery for loan collection purposes requires hardly any further research to justify it. The savings from this policy should be appreciable and immediate. The introduction of the income contingency principle on the other hand could well be prefaced by further work in estimating probable magnitudes. Such calculation will recognize the interdependence of three key parameters: (1) the threshold income (above which repayment is called for), (2) the annual repayment required, (3) the lending rate to be charged. Other significant variables include expected dropout rates, enrolment eligibility by program and gender, the government's borrowing rate, and the real growth rate. This paper includes some preliminary empirical explorations on these lines.

The present OSL program prevents many students from borrowing because they do not pass the currently constructed means test. Since the introduction of an income contingent loan will involve the abolition of means testing many students would then be allowed to borrow who were previously prevented. This innovation, on other words, will facilitate access as well as efficiency.

Provincial governments have been disposed to follow up their funding cutbacks with exhortations to the universities to meet the increasing student demand for places. The universities have then been severely frustrated because the same governments have not allowed them the freedom to set tuition fees. Some of the frustration results in some cases (as in Toronto) in dramatic cuts in university undergraduate places. This step merely passes on the frustration to potential students who are qualified to receive the education and would be willing to pay for it, especially given access to an efficient loan system.

Another issue pertains to equity within the student class. Facing inevitable future increases in fees, a case can be made for greater tuition differentials so as to match the different costs across disciplines. The major cost of university education (about 70 per cent of it) is that of teaching personnel. The mean annual income of a 45 year old professor in arts/sciences was about $68,000 in 1990. the mean income of a 45 year old with a medical degree was about twice as large at about $140,000. Judging by labour costs alone therefore, the tuition for a medical education should be twice that for arts/science education. In fact it was only just over a quarter higher. Reference to non-labour costs does not dispose of the point since those in medical education are well above average. Similar reasoning suggests that tuition should also be relatively much higher for education in law, architecture, engineering, pharmacy, dentistry and several other professional courses. In view of the expected future need to raise tuition fees still further, there is a strong case for focusing the increases initially upon the professional courses while leaving arts/sciences little changed for a year or so.

Since much of this report dwells on two policy innovations: (1) the use of the income tax machinery to collect student loans, (2) the introduction of an income contingent loan system, it ends with a survey of the experience of two countries, Australia and New Zealand where these policy reforms have just been introduced. The evidence to date is that most practical problems have now been successfully resolved. The previously established upward trends in enrolment, meanwhile, appear to have remained intact.

INTRODUCTION

The intention of the Discussion Paper series of which this contribution is the first, is to produce in depth studies of current issues, circumstances or challenges that have an immediate bearing on the progress, prosperity and general "flourishing" of Ontario's universities. The particular challenge that is the setting for this first report is nothing less than financial survivability of universities at this time of deficit problem preoccupations of all governments.[1] Having borrowed excessively in the past, present governments are now being forced to pay the price and curb their spending in most directions. And higher education seems to be no exception despite strong arguments to the effect that economic growth, which is the strongest solution to the present crisis in public finance, is dependent more than ever on the increased creation of human capital. Signs are now abundant of particular universities having to drastically reduce the number of undergraduate places. Although the aggregate figures of enrolment throughout Canada still show annual increases, the rate of increase appears now to have slowed.

The Ontario government's response to the financial stringency just described is now abundantly evident in the form of "social contracts" that involve spending cuts across the board. In the case of postsecondary education one important example of this stringency is contained in the decision to restructure the Ontario Student Assistance Program (OSAP) so that the customary grant element is largely converted to additional loan provision. Part I of this paper will bring out and analyse some hidden implications of this particular change and will discuss the need for radical modifications of Ontario's Student Loan Program that will enable students and universities to tap more private funding and abolish the present means testing of student loans. Part II investigates the probable trend in the level and structure of university fees and the likely consequences of such events. Part III offers a summary of recent changes in student assistance schemes in New Zealand and Australia, changes that incorporate (a) the full use of the income tax machinery in the collection of loan repayments and (b) the implementation of an income contingent loan system. Part IV presents some simulations of plausible outcomes of the introduction of an income contingent loan system using different assumptions concerning rates of interest chargeable to students, the length of the repayment period, and the minimum income repayment threshold. Part V offers the main conclusions.

[1] The deficit problem is now being seen by most, if not all political groups as needing the most urgent attention. NDP leader Audrey McLaughlin, for instance, stated on April 29th, 1993: "I don't think there's anybody in Canada, in any province, in any territory, or federally who doesn't believe that we have to be conservative in the sense of addressing the budget and deficit." Globe and Mail, Friday, April 30th, 1993, page 1.

PART I
STUDENT LOANS

Increasing Reliance on Student Loans

The last eight years have witnessed an extraordinary growth of Ontario student loans. Table 1 shows that the value of annual loan awards quadrupled from about $26 million in 1985/86 to almost $106 million in 1992/93. The value of grants issued to students in 1992/93 (as of April 1993), meanwhile, was nearly $277 million. Suppose the newly planned changes to the OSAP legislation had occurred in the 1992/93 period and that loans substituted for grants dollar for dollar (which appears to be largely the intention). The loan amount would then have increased to at least $383 million. This would have been a jump of three and a half times the actual amount lent in 1992/93. But this is the kind of growth in lending magnitude we can expect for 1993/94. In fact the officially estimated loan total expected for 1993/94 is greater still at about $450 million.

TABLE 1
The Growth of Ontario Student Loan (OSL) Assistance

Year	# of recipients	# of OSL awards	OSL Amount	Average OSL
1985-86	109,179	24,324	$ 26,379,816	$1,085
1986-87	108,163	23,667	$ 27,120,431	$1,146
1987-88	104,787	24,037	$ 30,152,293	$1,254
1988-89	99,824	24,175	$ 32,049,953	$1,326
1989-90	100,384	27,407	$ 37,035,450	$1,351
1990-91	111,564	34,430	$ 51,759,592	$1,503
1991-92	142,260	55,941	$ 90,042,439	$1,610
1992-93*	159,774	65,075	$105,906,426	$1,627

* As of April 4, 1993

Source: OSAP, Statistical Branch

Before placing such exceptional new strain on Ontario's student loan system, it is essential to subject it to fresh scrutiny so as to recognize, and then remove, any existing flaws. Consider first the system's central rationale. Like most others in Canada, the Ontario government has made it clear that, while it is prepared to cover the bulk of the operating costs of each Canadian student's university education, at the same time it expects students themselves to contribute <u>some</u> positive share. And according to one source of evidence this disposition appears also to accord with that of the general public. A recent Angus Reid

poll conducted for the Association of Colleges and Universities of Canada (AUCC), reports that three-quarters of all respondents support the idea of students paying tuition fees. Forty-two per cent, indeed, expressed the opinion that students should pay fees covering as much as half the cost of their education. At the moment university student fees in Ontario amount to about one-fifth of annual operating costs. And it is interesting, incidentally, to compare this with the recommendation of the 1991 Smith Commission of Inquiry on Canadian University Education that tuition should cover 25 per cent of total university operating costs.

To take Ontario's present approximate proportion of 20 per cent of costs as a minimum tuition target, the policy presumably has to mean what it says. Thus it would be confusing to announce the 20 per cent objective and then allow students to enjoy the kind of concealed subsidies associated with the major federal student loan programs in the U.S. The U.S. loans contain substantial, if relatively inconspicuous, subsidies for two main reasons. First they charge interest rates that are significantly below market interest levels. Second they allow students to postpone repayment while they are attending university. The result is that the real cost of repayment (the present monetary value of payments) is less than the original amount of the loan. Recent calculations reveal that the subsidy implicit in the major U.S. student loan programs is typically in the range of 30-50 per cent of the face value of the loan.[2]

We should next enquire how far this is the case in Ontario. For if subsidies associated with loans here amount to 50 per cent of the face value of the average loan, the students' fees would account for a significantly lower proportion of the annual costs of their education despite the announced intention of 20 per cent.[3] Several reasons will now be offered for believing that the 'inconspicuous' subsidies to Ontario student loans have reached levels at least as high as those in the U.S.

Explicit and Concealed Subsidy Elements in Ontario Student Loans

Interest on Ontario student loans is paid by the provincial government so long as the student continues to attend university and for six months after leaving. This advantage to students is correctly viewed as a subsidy, and its total value increases with the average duration of students' attendance at university. Although the subsidy is fairly explicit descriptively, its total cost is not widely known. A few simple calculations are illuminating.

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[2] Charles Clotfelter et al., Economic Challenges in Higher Education, University of Chicago Press, 1991, p. 92.

[3] We must remember that not all students qualify for student loans. But if all of them were borrowers, and loan subsidies were 50 per cent of the average loan's value, student fees would probably account for only about 10 per cent of costs.

The 1991 Smith Commission estimated that 42 per cent of full-time students fail to get a degree from their university within five years. Assume, nevertheless, that the average duration of degree courses is four years. Add to this one half year of freedom from interest charge after leaving higher education. The total interest subsidy will therefore be paid over four and a half years. The estimated total value of Ontario student loans expected for the one academic year 1993/94 is $450 million. Assume that roughly 60 per cent of this, or $270 million, goes to university students (the estimate is based on college and university enrolment ratios and other considerations). As we shall argue later a reasonable initial interest rate to charge students would be 10 per cent. The cost to government of paying the interest for the first year would then be 10 per cent of $270 million or $27 million. The present discounted value of the expected interest subsidy covering the next four and a half years would be around $100 million.

Another financial advantage to student borrowers from OSAP is that of the favourable level of interest that they are charged on their loans. This point also is not widely appreciated. To understand it fully it is necessary to compare the private loan market rates faced by young people. If, for instance, they want to purchase cars and apply for loans to finance them, the lenders must obviously exercise special care in examining the borrowers' credit-worthiness. The lender's task is to minimize the uncertainty of repayment and ultimately of default. Even with the most thorough of checks of the credit history of each borrower, significant uncertainty usually remains. To allow for the considerable risk of nonpayment, a premium is usually added to the lending rate. More importantly, to prepare for the possibility of full default the lender can seek repossession of the car or other items purchased with the private loan finance.

In contrast to such loans, those for university education cannot be secured by the purchased item: in other words, education embodied in the borrower cannot be repossessed. Yet the risks of lending to students for their education is at least as large as lending for material purchases of items such as cars, televisions and furniture because the future earnings of the students, out of which repayment of the loan is expected, while expected to be high on average, are highly uncertain.

Consider, therefore, the particular level of the interest rate that the Ontario government decides to charge students for their loans. The current basis is the prime rate plus one per cent. In 1993 the prime rate is around six and a quarter per cent. On this basis, the Ontario formula will call for a student borrowing rate of seven and a quarter per cent. The typical range for consumer loans, meanwhile, is around thirteen per cent. The difference suggests another source of 'subsidy' enjoyed by students. This conclusion is supported by two additional observations: first the evidence shows that the demand for student loans exceeds the supply, bearing in mind that they are subject to means tests. Without these tests more students would apply. Of those who currently think they have a chance of passing the tests, about ten per cent are rejected. Many others, meanwhile, do not bother to apply because they are sure they will fail to satisfy the means test.

The second reason for believing there is a substantial 'subsidy' element in the interest rate payable on student loans is that, for the system to work, the government has to assure the banks that in case of default they will be able to recover the principal and outstanding interest. Such guarantees are currently proving extremely costly to governments especially in view of the relatively high rate of delinquencies (see the following section). In the case of Canada Student Loans, which are similarly structured to those in Ontario, the federal government is now considering trying to shift most of the burden of default risk on to the lending institutions. Under a new plan proposed in 1993, the commercial banks would no longer be reimbursed by the federal government for delinquent student loans, but in return they would be paid a risk premium of 5.2 per cent. If this 5.2 per cent is the correct measure of the risks involved, and if students instead of taxpayers were charged this amount, their rate on Ontario student loans would be the prime rate of 6.25 per cent plus 5.2 per cent, or 11.45 per cent. According to recent reports, however, the current belief in financial circles is that the 5.2 per cent premium offered is far below what the banks would need to compensate for the expected default costs. "As a result, the individual tenders submitted by the Big Six Banks, for example, are thought to have counterproposed a wide range of premiums, up to as high as about thirty per cent a year."[4]

If the banks do not agree to the new proposals one can expect, in these days of growing financial pressure, that government will be increasingly tempted to put more of the burden of the risk costs on to the students. And it could do this simply by imposing risk premiums much higher than the present one per cent above prime. But this prediction presumes that the authorities will persist with the present type of loan system. This paper will subsequently argue that appropriate, if radical, changes to the loan system itself could so dramatically reduce the default costs as to protect students from steep upward revisions in the interest charges that might well be awaiting them.

In addition to the rather concealed subsidies just discussed there are others that are more explicit. From 1993/94 a student who borrows more money than what is called a "pay-back maximum" will not have to pay it back at all. For example, an applicant who successfully negotiates a $7000 loan for a two-term program will have to repay only $5,570. In other words, the government will "forgive" $1,430 of the loan.

Those who will receive the largest loans (well exceeding $7000) will be students with dependents. Compared with a maximum Ontario loan for two terms of $5,780 that is possible for a single student, students with dependents will be able to borrow up to $13,430. These students, therefore, will receive the biggest "forgiveness subsidies". Meanwhile students with disabilities will be eligible to apply for what are called "non-repayable bursary assistance" which, in effect, is another kind of subsidy. Such "bursary

[4] "Student loan plan won't shun needy, Landry says", The Globe and Mail, Saturday, March 20th, 1993, p. B14.

assistance" will also go to married students and sole-support parents who have child care costs during the academic year.

These ancillary provisions can be confusing. The Ontario Student Loan Program could well be overburdened by being used for too many, often conflicting objectives. Arguably, it is much clearer and more logical to place the responsibility for the programs just mentioned upon the relevant welfare department. To announce that students are expected to pay tuition that covers 20 per cent of the costs of their education and then to make the kind of exceptions just reviewed presumably is to admit that the students' tuition in aggregate will be less than 20 per cent of costs and also that considerable variance occurs within the student class. The net contributions of single students, for instance, will be well above those of married students.

The conclusion of this section is as follows: Although it is widely claimed that Canadian university student fees currently contribute on average 20 per cent of annual operating costs of universities, the existence of several concealed subsidies in the student loan system, bring the ratio down well below 20 per cent. The concealed subsidies, meanwhile, appear to be at least as extensive as those prevailing in the U.S. To find examples of countries that are comparatively free of such "fiscal illusions" we have to go outside the North American continent. Space is accordingly reserved later in this report for a special investigation of circumstances in Australia and New Zealand, where, especially in the latter country, previously concealed subsidies have now largely disappeared.

The Nature and Extent of Ontario Student Loan Defaults

A report from the office of the provincial auditor in 1987 stated that between 1978 and 1986 about $26 million was paid by the Ontario government to lending institutions for defaulted student loans. Of the $26 million only $4 million had been recovered by March 1986. Efforts were being continued by the Central Collection Services Branch of the Ministry of Government Services to recover the large remaining amount. Subcontracting to private collection agents is common and on average they receive just over 20 per cent of the funds recovered. Their success is not overwhelming however. By 1991-92 the default rate on Ontario student loans was being reported as being as high as 8.4 per cent.

It seems that the longer the establishment of student loan systems, and the larger the total amounts borrowed, the bigger is the default problem. The Canada Student Loan Program, which is about 14 years older than that in Ontario and which has been providing larger individual loans on average, is burdened with a default situation of substantial proportions. According to the Auditor General's Report of 1990, one in six students was defaulting on his or her loan. The value of defaults accumulated on federal books is now around $1 billion. It is this situation indeed that is encouraging the Secretary of State's Office in

1993 to attempt to give up much of the management of its guaranteed loan system and contract out the business to one or two private banks in return for a negotiated fixed premium.

The point of all these observations on the federal loan system is that there is every reason to expect the provincial government of Ontario will be faced with a default problem of similar proportions following the quadrupling of its total lending from $106 million in 1992/93 to about $450 million in 1993/94. And if this prediction is correct, then, to reiterate, there is a serious danger in the near future of the Ontario government trying to pass much of these increasing costs back on to the student borrowing class as a whole via increased interest charges.

But again this presumes a failure of government to consider feasible loan system reforms and restructurings that will be described below. Before doing this, however, consider the following scenario. Suppose a student borrows $10,000 under OSAP and manages to escape payment forever. This default cost to taxpayers at any one time will obviously be at least $10,000. Suppose, however, that in ten years after leaving university, a collection agency tracks down the defaulting individual. He or she is then forced to repay the loan plus accrued interest. At first sight the problem would seem to be resolved and everything unambiguously accounted for. On further reflection, however, this is not so. Taxpayers have the non-trivial cost of covering the fee of the collection agent. Currently this charge in Ontario is reported to amount to between 15 and 26 per cent of the value of the defaulter's loan recovered. In our subsequent calculations we shall assume a median figure of 21 per cent for the agent's charge. In our example the fee would equal 21 per cent of the principal plus accrued interest.

Meanwhile there is an even weightier consideration. The legislation limits the charging of accumulated interest to simple interest payments covering each year in default. The opportunity cost to taxpayers is, of course, the forgone compound interest.[5] The difference between the two in consequence is a net taxpayer cost and another somewhat concealed subsidy to the student. An appreciation of the significance of this point can be seen from estimating the amounts of accrued interest that our 10 year defaulting student passes on to taxpayers because of the special protection of him/her in the legislation. In the 1980s the interest rates charged to students were typically above 10 per cent. Assuming a ten per cent rate, the law would demand from our student a repayment of $10,000 principal plus a $1000 simple interest for each of the ten years in default, or $10,000 in total interest liability accumulated. The liability at accumulated compound interest, in contrast, amounts to $15,940. The difference of $5,940 between compound and simple interest accrued is therefore the further cost to taxpayers that is concealed by the official terminology that simply declares the defaulted loan as having been "recovered". The minimum total real cost of default in our example amounts to $4,200 collection agent fee plus $15,940 accrued

[5] Thus, in our example, the compound interest is 10 per cent of $10,000 in the first year (= $1,000), plus 10 per cent of $11,000 in the second year (= $1100), plus 10 per cent of $12,100 in the third year and so on.

interest or $20,140 in total. This cost indeed is almost exactly double the original principal ($10,000) borrowed.[6]

Restructuring the Loan System: Reform (1) Making Full Use of the Income Tax Machinery

The potential dangers of placing the present excessive costs of the loan system progressively on to student borrowers that have just been explained, assume no major overhaul of the loan system. Yet a radical restructuring of it that promises substantial cost reduction is now quite feasible. This section will discuss this reform which focuses on greater use of the income tax authorities. The next section will present the case for an income contingent system.

Since extensive resources in establishing the machinery for income tax assessment and collection have already been invested, the marginal costs of using it to collect on educational loans should be relatively small. As already demonstrated, an efficient student loan system depends upon the supply of accurate information about the current income and location of graduates for several years after the individual has left the institution of higher education. Governments possess this knowledge automatically and cheaply through income tax statements.

Some evidence that the marginal cost of using the income tax machinery for loan collection is substantially smaller than the present system is now available from the U.S. In 1989 the United States General Accounting Office reported that $2.4 billion had been recovered since 1982, through the Refund Offset Program administered by the Internal Revenue Service. Approximately $1.8 billion of this amount was collected by withholding tax refunds to cover unpaid child and spousal support, while $0.6 billion was collected for unpaid federal non-tax debts. Nine departments participated, including the Department of Education which administers the student loans guarantee program. Costs related to the administration of this program have amounted to less than one cent for each dollar recovered. By comparison, Ontario's Central Collection Services Branch of the Ministry of Government Services subcontracts student loan recoveries to private collection agencies whose costs are about 20 cents for every dollar recovered!

[6] The collection agent's fee ($4,200) is 21 per cent of $20,000, which is the sum of the recovered principal ($10,000) and the accrued simple interest ($10,000). If compound interest is used the collection agents' fee would be larger. Losses to governments (taxpayers) from the practice of charging simple interest instead of compound interest begins, of course, when the period of default exceeds one year. When there are three years of default on a $10,000 loan (instead of ten years) in our example, the loss from failing to charge compound interest is $310. When the default period increases to five years the loss jumps dramatically to $1,110. Clearly the magnitude of loss is very sensitive to the average period of default.

With U.S. success rates like these the case seems overwhelming that the income tax process should take over student lending programs to a much fuller extent. Canada has already taken one step in the U.S. direction. The Secretary of State's department has now started to give Revenue Canada the names of people with longstanding delinquent student loan accounts. The plan which began in the academic year starting 1992 consists of deducting as much of the amount owed as possible from income tax refunds. When it was first introduced, the Secretary of State expressed hopes of recovering an extra $18-20 million in the first year over and above what the collection agencies would recover.[7]

The question now arises why we do not go further and employ Revenue Canada's potential in the most complete and comprehensive way. To collect on past loans by refusing to pay income tax refunds is only a partial solution since not everybody claims such a refund. As well many individuals will be so able to arrange their affairs as to avoid qualifying for an income tax refund. And there is every incentive to do this. After all what an individual is doing when he/she claims a refund of say $2000 is lending the government about $1000 interest free for the year.[8]

Revenue Canada, nevertheless, has now become used to the U.S. principle of "setting off" refunds against unpaid student loans. (And the same principle is now being employed also to recoup unemployment insurance overpayments.) But as the volume of refunds expected from student loan defaulters falls (as predicted above), Revenue Canada will have less work to do. The question is therefore: so why not expand its functions? Since the lending authorities already have one foot in the door of the income tax department the marginal cost of getting the other foot in should be very low. And once this is accomplished, as it has been in Australia and New Zealand, the tax authorities can collect regardless of whether or not the employee/borrower has a refund due.

Reform (2) Conversions to an Income Contingency Loan (ICL)

The income contingency loan (ICL) meets the efficiency requirement of providing insurance elements for borrowers who face some uncertainty as to their future income. It meets also the concern of those who express doubts whether it is wise or desirable for students whose parents have low incomes to take out large amounts of debt; or that there will be little prospect that such individuals will be encouraged to take on any debt burden. But parental income is irrelevant in the ICL scheme. The consequence is that means testing, and all the costs that go along with it, will be dropped. Post-education income of the borrower is the only relevant income. The ICL involves no burden of debt that must be paid unconditionally; repayment falls only on the prosperous, that is upon those persons who graduate and earn income at or

[7] Montreal Gazette, August 22nd, 1992, page C3.

[8] Brian Christmas, "Why a smaller refund is better", The Globe and Mail, May 1st, 1993, page B19.

above a given (and usually relatively high) level benchmark. Most of the subsidies associated with the present OSL would be dropped. There would be no interest-free periods such as when the student is in college. Interest will accumulate in the value of the debt owing. Similarly the interest will be at compound rates instead of the present simple interest.

Figure 1 indicates that individuals with university degrees have a considerably larger lifetime income than those whose highest level of education is high school This is true even when taking account of the fact that the income of those with only high school education is typically larger than that of more highly educated individuals at ages below 23 (and allowing generously for discounting). The figure also suggests the possibility of greater convenience to graduates of repaying loans out of their incomes in their late 30s and early 40s or even later, a convenience that is not normally possible with the current OSL which is a mortgage type loan with repayments in fixed instalments.

Some of the efficiency benefits of income contingency loans can be seen by considering the disadvantages of Ontario's conventional mortgage-type loans. The presence of ordinary business uncertainty means that some college graduates can be expected to do well and others not so well in their future careers. The former will have no difficulty paying back their loan at fixed intervals and over a relatively short span of time. The latter, in contrast, might well soon be in serious difficulty with such a fixed debt burden. Because spending on education, like any other capital investment, faces risk and uncertainty, ideally it should be financed as an equity investment with the investor (this time the government) receiving a share of the "profits" according to the number of "shares" purchased.

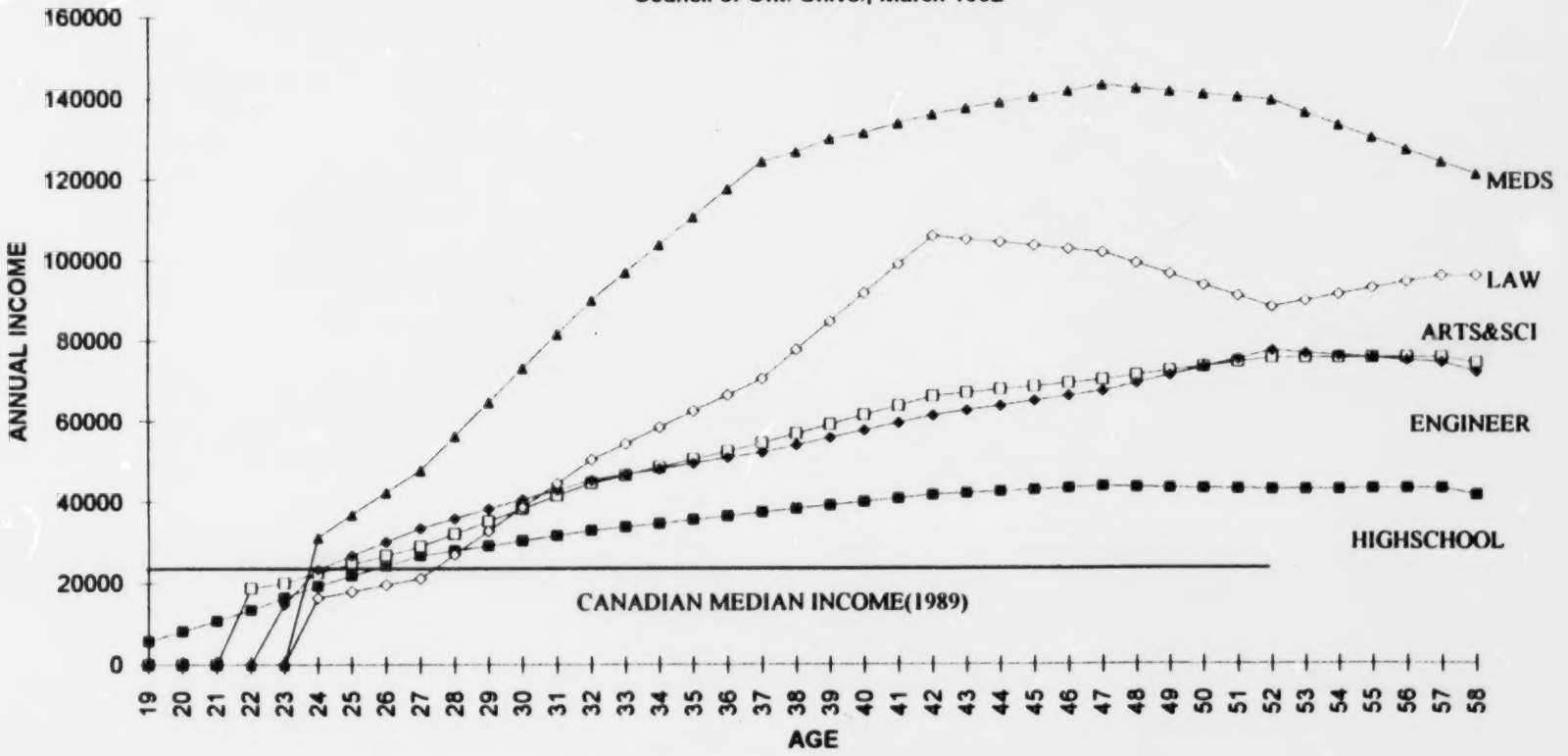
The logic of this approach is that the borrower contracts to pay a specified fraction of his/her future earnings (or the difference between these earnings and those received by average persons with the next lower level of education). The government, as investor in several educational ventures across the population of students endeavours to see to it that the repayments <u>in total</u> are sufficient to cover all the costs.

Typically proposed income contingent plans allow for long repayment periods of up to 30 years. Students with university degrees who take more than average time to find matching occupations, and may therefore be classed as "temporarily unsuccessful", may well be able eventually to catch up with their loan payments and settle in full. In the words of David Stager "unlike fixed-debt obligations that require fixed-payments at fixed intervals, the contingent-repayment system allows for low or irregular payments in response to low or irregular incomes."[9] Because students borrowing under the current mortgage-type

[9] David Stager "Accessibility to Universities in Ontario". Ontario Universities: <u>Access, Operations, and Funding</u>, Ontario Economic Council, 1985.

AGE/INCOME PROJECTIONS FOR CANADIAN MALE UNIVERSITY GRADUATES*

* Diagram constructed on the basis of 1986 census from Contingent Repayment Student Assistance Plans, Council of Ont. Univs., March 1992



Reprinted from Steven T. Easton (ed.), Ending the Squeeze on Universities (Montreal: IRPP, 1993), pp. 28, 34. Used by permission.

Figure 1.

fixed rate loan plans are unable automatically to spread their indebtedness over a long period and so match the irregularity of their income payments in the early years, many of them are tempted to default.

Since, however, the usual income contingency program embraces long and flexible periods of repayment, the information requirements are substantial. And it is here where the coupling with the income tax process becomes most helpful since the revenue authority processes more detailed and centralized data on individuals and their income than does any alternative institution. It is interesting that Milton Friedman, the pioneer of the contingency loan concept a third of a century ago (1955), was careful to link his proposal straight away with the internal revenue service. Friedman proposed his plan for what he called "equity" financing of education through a government body that could offer to finance or help finance the training of any individual who could meet minimum quality standards. It would make available a limited sum per year for a specified number of years, provided the funds were spent on securing training at a recognized institution. "The individual in return would agree to pay to the government in each future year a specified percentage of his earnings in excess of a specified sum for each $1,000 that he received from the government. This payment could easily be combined with the payment of income tax and so involve a minimum of additional administrative expense".[10]

Some critics interpret the income contingency "philosophy" to envision financially successful students "subsidizing" those who fail. This, however, is potentially misleading. To explain why, consider the analogy with physical capital. How do we handle the problem of investment intended to produce a given type of construction such as, for instance, a hotel chain when we know there is uncertainty of success? The answer is that investors typically pool their risks across several capital projects including say automobile factories, steel mills, shipping and so on. They do this, of course, by holding a mixed portfolio of shares. The chances of losing on one component project in the portfolio is offset by the greater probability, ex ante, of gaining on the average investment. If the successes are expected to exceed the losses then net gains are looked for. Thus after the event (ex post) we might find the new hotel chain to be losing money and facing bankruptcy while substantial profits are being made out of automobiles factories, shipping and steel mills. It is a mistake to conclude, however, that these three successful undertakings are subsidizing the new but financially precarious hotels in the sense that special levies are imposed on the successful so that the money (subsidies) can be transferred to the unsuccessful.

A similar situation is conceptualized in the income contingent loan theory. The government, on behalf of taxpayers, invests in a "mixed portfolio" of human capital investments. If subsequently the average investment pays off, while some selected investments such as training in aero-engineering fail, the total program will have been viable if the average return over all the investments (winners and losers) is

[10] Originally published in Milton Friedman, "The Role of Government in Education", and reprinted in a revised form in Capitalism and Freedom 1962, University of Chicago Press, page 105, our italics.

sufficient to earn the going rate of return plus an appropriate risk premium. But there is no implication here that the successful human capital investment in such areas as medicine, architecture or law are subsidizing the aero-engineers. There is no transfer taking place from one set of graduates to another.

The case of government investing in education across disciplines on behalf of taxpayers is, of course, not completely parallel with the private (multiple) shareowner in industry. The education in people is embodied human capital; shares by third parties in such people are not allowed by law and cannot therefore be bought and sold. With human capital the nearest one gets to the industrial shareowning case is a situation where the government, as "mega investor" for society, attempts by trial and error to charge all graduate workers an interest rate on their loans such that it is sufficiently above the government's borrowing rate to make the total invested yield a net normal return. A minority of graduates will not pay this interest and will not repay the loan because their earnings never rise above the benchmark level of, say, average earnings. The size of this minority cannot immediately be determined with any precision. The lending rate chargeable to students will reach its optimal level, therefore, only after trial and error. At this ultimate stage those graduates who earn above the average will collectively yield sufficient to make the whole project worthwhile, even taking into account the losses (failures). And, to repeat, this is not a case of cross-subsidization. Even in the transition period net gains are very probable even before the "ideal" (optimum) chargeable interest rate has been determined. This is because, although still "imperfect", the preceding loan system can be "more imperfect", especially because of its high default rate.

Immediate Financial Requirements of Moving to an Income Contingency Plan

One practical issue that must be addressed concerns initial funding. It may be objected that, in these financially stringent times for government, it will not be in a position to raise extra revenues or to increase deficits still further for the purpose of start up financing of an income contingent loan system.

The raising of money for student borrowing, however, could continue to be conducted through the present sources: the commercial banks. Alternatively the lending programme could be administered by an independent agency that could raise funds from the issue of bonds while a stock exchange for second hand bonds similar to the Student Loan Marketing Association, "Sallie Mae", in the U.S. could subsequently be developed. An essential condition in the initial contract would be that the student would have to declare his/her social insurance number (SIN), and to agree to have copies of the contract details lodged with Revenue Canada. With the possession of the full details of most students' changing future earnings and geographic locations, the income tax authorities could then act as the primary monitor of subsequent loan collections.

Meanwhile, government itself could initially lend students directly out of the substantial savings from terminating the current loan arrangement. Since the new system would dispense with interest exemption

during college attendance, this factor would imply immediate savings in government budgets. The potential for such saving is seen from our previous estimates. For 1993/94 alone the savings in Ontario should be over $20 million.

Money will also be saved by a substantial fall in defaults when Revenue Canada is made responsible for the collection. If we make the plausible assumption that the default rate will fall say to 0.4 per cent from its present 8.4 per cent, there will be another saving of 8 per cent of the annual total lending to students. Additional savings will accrue from reductions in payments to private collection agents, abolition of forgiveness of lending above the "pay-back maximum" and a large reduction in administration costs following the abolition of means testing of the loans. Taking all the above expected savings, a rough estimate of the aggregate might be about 25 per cent of the total annual lending that is expected for 1993/94 under present arrangements.

A full analysis, however, demands recognition of an important additional variable. With the lifting of means testing, and other things equal, more students can be expected to apply for, and succeed, in obtaining loans. It must be conceded that the precise increase in lending for this reason is difficult to estimate. Two important circumstances, however, will constrain the increase. The first is the new level of interest to be charged. My own estimate (above) of an optimum figure is around 10 per cent. This is above the rate of about 7.25 per cent that is based on the current loan rate formula of prime rate plus one per cent. The second constraint is that, when students fully recognize the use of compound interest and the absence of interest free periods, many will make their decisions about which courses to enter with more thoroughness. They will, moreover, have more incentive to finish their degree program on time. This will not only reduce the financing requirements of the loan system, it will also bring economies in the total capital requirements of universities, especially with regard to classroom space.

Some Further Consequences

(A) Effects on Access

As just explained, the replacement of the OSL by the income contingent loan system described above will remove the barriers of means testing and will free the student from financial dependence on his/her family. The Macdonald Commission clearly recognized this point in 1985 and its reference to a problem with the CSLP is equally applicable to the OSL. A contingent repayment loan plan, the Commission observed:

> ...removes the necessity to consider ... whether or not a student could be supported by his or her parents. The provision in the current CSLP arrangements that requires this information has always been difficult to administer, and many students have learned to manipulate it to minimize the cost of loans to themselves, whatever their family financial

situation. The income contingent/repayment feature does not require any 'needs' test before the loan is granted, since repayment will be tailored automatically to post-education income, and not to current need.[11]

As for the individual student, even if his/her parents' income is low, he/she is more likely to belong to the average or higher than average income group if we use the criterion, as we should, of expected lifetime income. The mere fact that this individual has qualified educationally for a place at university already places him/her ahead in future income prospects.

As previously explained, it is difficult to predict the precise number of new borrowers. We know that about 10 per cent of students who apply for the OSL do not succeed. Provided that their rejection occurred in all cases because they were borderline in the sense of financial rather than academic reasons, this proportion might indicate the minimum number of new borrowers to expect. More light will be thrown on the whole issue following the current Ontario Government's pilot program to determine the attitude of a sample of 1000 such "borderline students" on an income contingent plan.

(B) The Chances of a System That Is Self-liquidating

The question that is most complex of all, and one that can not be fully answered until after some experience with the new system, is whether the whole endeavour will come close to being self-financing. There are several variables that have a bearing on this matter. They include: the government's borrowing rate, the student's lending rate, the level of the payment threshold and the real income growth rate. Meanwhile, the question about the chances of breaking even is in the same category as the earlier example of judging the viability of a mixed portfolio of shares in a variety of physical capital intensive industries. There is no guarantee that such a break-even target will be reached. But then there is much less guarantee under the present OSL system.

One important avenue for continual adjustments of the system is appropriate incremental changes to the students' borrowing rate. As explained earlier, consumer loan rates are quite "high" at around 14 per cent currently. This is because of uncertainty of full repayment even in this case where repossession of a tangible asset affords some kind of assurance to the lender. Because with educational loans such repossession is not possible, other things equal, one would predict a nominal market rate for education loans well above 14 per cent. For the purposes of this report a nominal rate of 10 per cent (or a real rate of about 7 per cent), which is between that of the consumer loan rate and the government's borrowing rate, is suggested as initially appropriate. But because the alternative of borrowing from commercial

[11] Royal Commission on the Economic Union and Development Prospects for Canada. Report. Toronto, University of Toronto Press, 1985, Vol. 11, page 751.

lenders is so high the government would appear to have plenty of leeway to make adjustments with the aim of attempting to make the whole system self-financing.

(C) The Social Benefits of Education

Making the loan system self-financing does not mean that the students will be charged for the full costs of universities. And neither does it mean that the social (external) benefits from university education are being neglected. The analysis, at least so far, has typically envisaged tuition covering 25 to 35 per cent of average annual operating costs. Consequently this is an education whose cost is government subsidized to the extent of 65 to 75 per cent. It has been presumed here that it is this large subsidization that is aimed at capturing the social benefits.

Whether student fees are likely to rise in the near future so as to be contributing more than 25 to 35 per cent of costs, and whether the pattern of relative fee levels across disciplines will change, is the subject of Part II of this report.

(D) Moral Hazard

It is sometimes suggested that individuals with incomes just around the threshold (benchmark) income may be tempted to work part time or leave the labour force in order to avoid servicing and repaying his/her loan. Similarly it is argued that graduates might emigrate from Canada in order to escape repayments. It is difficult to deny the existence of such "moral hazards" as they are called. One point to notice, however, is that they pertain to all kinds of loan systems and not just to the income contingent variety. Another point is that, in fact, emigration of post-secondary graduates is low. Moreover the repayment obligation would remain on the emigrant's file in Canada. Any request for service from the Canadian government (such as renewal of one's passport) would trigger a demand for repayment.[12] As for individuals who are motivated to keep their incomes below the threshold, they are not likely to be numerous. Certainly a medical student would not turn down the prospect of a medical income of say $200,000 per annum for an income one-tenth the size just to escape loan repayments. And the same kind of argument can be applied to most students. The threshold income idea is usually viewed as a kind of insurance for those with zero income such as women who withdraw from the labour force for certain periods of time.

[12] David Stager and Dan Derkach, Contingent Repayment Student Assistance Plans, Council of Ontario Universities, March 1992, page 20.

PART II

Tuition Fee Levels and Structures

The savings resulting from the reforms to student lending programs examined in Part I will accrue in the first place to government. It was suggested, nevertheless, that it could use its discretion to devote some of the proceeds to ease the situation of universities and students in one way or another. Expansions in total revenues from increased tuition fees, on the other hand, go immediately to the universities. At first sight, therefore, it would seem that universities would regard tuition policy as one of their major instruments for restoring financial solvency at a time of federal and provincial government restrictions on support. In practice, however, things are not so straightforward because both the level and structure of university fees across the province are strictly regulated by government.

In these circumstances it would appear to be in the interests of each university to try to bring the era of regulation to an end. Time lag provisions in current funding arrangements cause much inflexibility. The typical financing formula is based on a university's population of several years ago. More than one-half of each of Ontario's university's "basic operating income" in 1985 was based on enrolment patterns prevailing between 1975 and 1978.[13] Things have improved since then but only marginally. Such rigid formulas together with tuition control have resulted in a lack of response to new subject demands of students and in operation of old subject provision at above minimum cost.

The likelihood that universities will be hindered by such regulation from adapting to rapidly changing technology is expressed in the Macdonald Commission Report (Vol II, page 748). The Commission argued strongly in favour of freeing up the fee structure because it believed this would induce greater variation in tuition charges across programs and institutions. The result in its opinion would be a better, more direct, price relationship between demander and supplier and consequently a much more dynamic and heterogeneous higher education system. The Canadian Manufacturers' Association has also argued similarly and has called for "the deregulation of tuition fees".[14]

Both the Macdonald Commission and the Canadian Manufacturers' Association would presumably have been impressed with the current situation in New Zealand where regulations have been abolished, and where, from 1992, each university has been given full freedom to charge what fees it considers appropriate. It will be seen from Table II that in Ontario universities' tuition fees are set across five

[13] Peter M. Leslie, "Financing Techniques, Good and Bad", Ontario Economic Council Proceedings, 1985.

[14] Edwin G. West, Higher Education in Canada: An Analysis, Fraser Institute, 1988, page 102.

disciplines but with very little difference between them. This contrasts extremely with the situation in New Zealand. In that country universities are unilaterally setting fees according largely to the differential costs of each subject. In the University of Otago, for example, tuition fees for dental students are about five times as high as those for Arts and Science students. And the fees for dental students in other New Zealand universities, while similarly high, are not identical.

TABLE II
Tuition Fees in Ontario Universities

Disciplines	1991/92	1992/3
Arts and Science	$1,770	$1,894
Other programs	1,770	1,894
Engineering, Architecture	1,920	2,055
Law	1,770	1,894
Medicine, Dentistry	2,250	2,408

Source: Tuition and Living Accommodation Costs at Canadian Universities, Statistics Canada, CAT. 81-219, Annual.

The pattern of Ontario's tuition fees in Table II is hard to justify on the grounds of cost differences across disciplines. The major cost of education (about 70 per cent of it) is that of paying for teaching personnel. With the average age of professors at around 45[15] years it is interesting to make a rough estimate of the costs, say for an education in arts and science compared with those for medicine. The professor who lectures in arts and/or sciences typically holds a doctorate. From Table III we find that the census figures for 1990 show the mean annual income of a 45 year old with a doctorate was $68,301. The mean income of a 45 year old with a medical degree on the other hand was about twice as large at $140,320. If the ratio of non-labour costs of education, which amount to about 30 per cent of the total were similar in the two disciplines, then the tuition for a medical education should be twice that for an arts and science degree. In fact we find from Table II that medical tuition is only 27 per cent higher than arts and science tuition.

There may well be qualifications that one could make to this rough estimate, but surely none that would make the cost of a medical education only 27 per cent higher than that of the arts/sciences student. If anything the qualification indeed would point to a higher ratio than 2:1 if we find, as is very likely, that the non-labour costs (e.g., equipment expenses) of a medical education are significantly higher than for an arts/science education.

[15] Education in Canada: A Statistical Review for 1990-91, Statistics Canada, Cat. 81-229 Annual, Chart 26.

Table III Mean Employment Incomes in UNIV Program, Ontario, Males, 1990

AGE	HIGHSCH	ARTS&SCI	ENGINEER	LAW	MEDS	MASTERS	DOCTORATE
19	5740	0	0	0	0	0	0
20	8124	0	0	0	0	0	0
21	10649	0	0	0	0	0	0
22	13391	18750	0	0	0	0	0
23	16488	20000	14721	0	0	0	0
24	19320	22500	23261	16250	31250	25000	24495
25	21775	24629	26645	17872	36762	25176	24762
26	24229	26758	30028	19495	42274	25352	25029
27	26684	28886	33411	21118	47786	25529	25296
28	27915	32016	35790	26947	56234	29067	28757
29	29147	35146	38169	32776	64682	32605	32218
30	30379	38276	40548	38605	73130	36143	35679
31	31611	41406	42927	44434	81577	39681	39140
32	32842	44536	45306	50264	90025	43219	42601
33	33742	46519	46688	54299	96884	45792	44802
34	34642	48502	48069	58334	103744	48366	47004
35	35542	50485	49450	62369	110604	50939	49205
36	36442	52468	50831	66404	117463	53513	51406
37	37342	54451	52212	70439	124322	56086	53608
38	38208	56770	54030	77532	126658	57615	56114
39	39073	59089	55848	84625	128994	59144	58620
40	39938	61408	57666	91718	131330	60672	61126
41	40804	63726	59484	98812	133666	62201	63632
42	41669	66045	61302	105905	136001	63730	66139
43	42064	66874	62511	105081	137441	64469	66860
44	42460	67703	63719	104258	138881	65208	67580
→ 45	42856	68532	64927	103434	140320	65948	68301
46	43252	69361	66136	102610	141760	66687	69022
47	43648	70190	67344	101786	143200	67426	69742
48	43476	71258	69322	99072	142461	67567	69748
49	43305	72326	71301	96358	141722	67707	69753
50	43134	73394	73279	93644	140983	67848	69758
51	42962	74462	75258	90929	140244	67988	69764
52	42791	75530	77236	88215	139505	68129	69769
53	42840	75517	76694	89724	136403	68055	72046
54	42890	75504	76031	91234	133302	67981	74324
55	42939	75490	75429	92744	130200	67907	76602
56	42988	75477	74826	94253	127098	67833	78880
57	43038	75464	74224	95762	123996	67759	81158
58	41350	74098	71867	95752	120955	65793	80120

Note: Data are estimated for ages prior to 25 from data for the 15-24 age group.

Source: Census of Canada, 1991

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Compare next the employment income of a 45 year old professor holding a law degree with a 45 year old university teacher holding an engineering degree. Table III suggests that the income of the lawyer is 59 per cent higher than that of the engineer. Table II, however, shows that the university tuition fee for the law student is actually 8 per cent lower than that for the engineering student. One can, of course, concede that the non labour (equipment) costs of the engineer's course are considerably higher than those for law teaching. It is difficult to believe, however, that this difference is enough to justify the engineering tuition being higher than law tuition.

It may be contended that Ontario's fee patterns have been constructed so as to reflect different benefit, as well as different cost, levels. And a comprehensive measure of benefits includes social, as distinct from private, benefits. Quoted examples of social (external) benefits includes (a) the tendency to foster political stability by developing an informed electorate, (b) the transmission of a common cultural heritage, (c) the widening of intellectual horizons contributing to enhanced enjoyment of leisure. The question now arises whether different university courses generate different social benefits at the margin of individual purchase. Society's demand curves for social benefits from given programs are normally expected to be downward sloping. After a time, when a certain quantity of education, call it Qo, in a particular program has been reached, the social benefit demand curve will touch the horizontal axis. At this point another increment of education will yield no extra social benefits. The marginal social benefits, in other words, will be zero.

Meanwhile the private demand, especially for professional courses such as dentistry, pharmacy, computer science and law can be so strong as to result in private purchases of education that are well in excess of Qo. In this case, and because the marginal social benefits here are zero, there is no need for society to arrange for special arrangements to lower tuition still further to encourage marginal increases in the purchases of education.

Courses in arts and sciences on the other hand would appear to have much more to contribute in the way of the social benefits (a), (b) and (c) outlined above. This fact would argue, if anything, for arranging the pattern of fees that was favourable to arts and sciences relative to professional courses, rather than the other way round as at present.

Private Rates of Return

One source of evidence that is consistent with the expectation of a particularly strong demand for professional courses, compared with others, are reported private rates of return. the private rate is the rate that equates the discounted net (after tax) earnings differential associated with attending university to the private cost of obtaining it. The private costs include tuition fees and forgone earnings. Table IV shows that typically private rates from professional courses well exceed those for arts and science programs. What is more this pattern seems to have rigidly prevailed between 1960 and 1985.

Table IV
Private Rates of Return for Males for Selected Bachelor and First Professional Degree Programs, Ontario, 1960 and 1985[16]

Program	1960	1985
Arts and Science Teaching	10.3	4.0
Commerce Accountants	19.0	13.1
Law	14.7	13.6
Engineering	16.8	14.0
Architecture	14.4	6.0
Pharmacy	17.9	17.4
Medicine	18.0	21.6
Dentistry	30.2	22.4
All occupations	17.4	14.0

The upshot of the discussion is that there appears to be a strong need to alter the relative tuition fee structure. In view of the expected future desire to increase tuition fees still further, this would argue for increases in the professional courses that are well above average.

If, for instance, there was a 50 per cent increase in the fees for medical courses they would then be about 90 per cent higher than the tuition for arts and sciences. Bearing in mind that the labour cost is about 100 per cent higher for medical courses the new level suggested would be more appropriate. The same kind of relative increase in tuition would probably be in order also for dentistry and pharmacy. Tuition for law courses, meanwhile, should at least be equalized with engineering, and bearing in mind our discussion about public (external) benefits from education, the fees for both law and engineering could

[16] Taken from Table 5.2 in David A.A. Stager, Focus on Fees, Council of Ontario Universities, July 1989.

suitably be lifted say about 40 per cent from the present engineering base tuition of $2055 to a level of $2568. Such a discriminatory approach to future tuition increases would be better than say an equal increase of 10 per cent tuition all round.

The Effect of Tuition increases on Enrolment

In economics the "first law of demand" states that other things equal an increase in the price of a given item will lead to a contraction of demand (and vice versa). There is no reason to expect that increases in the price of a university education (i.e. the tuition), unaccompanied by other reforms, will have any different result. In fact numerous statistical studies in the U.S. have recently testified to this theoretical conclusion. Leslie and Brinkman, for instance, found in 1987 that there was a decline in college enrolment of 0.7 percentage points for every $100 increase in tuition.[17] Approximately the same result had already been found from 10 studies cited by McPherson[18] in 1978. The finding that tuition increases exert a negative effect on enrolment was also confirmed in 1984 by Ehrenberg and Sherman[19] and in 1986 by Schwartz.[20]

The law of demand, however, is coupled with an important condition: that other things remain equal. This is rarely the case even within relatively short periods of time and other changes that have accompanied the tuition increases in the U.S. have typically neutralized the fee increases such as those just referred to. As for Canada one has only to refer to Table V which shows a steady increase in university enrolment in both Ontario and Canada as a whole and compare it with Figure 2 which shows a steady increase in tuition fees in real terms over the same period, and bearing in mind that university costs have been rising faster than the CPI over this period.

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[17]Larry L. Leslie and Paul T. Brinkman, "Student-Price Response in Higher Education: The Student Demand Studies". Journal of Higher Education 58, March 1987, pp. 181-204.

[18] Michael McPherson "The Demand for Higher Education", in Public Policy and Private Higher Education, ed. David W. Breneman and Chester E. Finn. 1978 Washington, D.C., Brookings Institute.

[19] Ronald G. Ehrenberg and Daniel R. Sherman, "Optimal Financial Aid Policies for a Selective University", Journal of Human Resources, Spring, 1984.

[20] Brad J. Schwartz, "Wealth Neutrality in Higher Education: The Effects of Student Grants". Economics of Education Review 1986, 5(2) pp. 107-17.

Table V
Full Time University Undergraduate Enrolment 1986-87 to 1990-91

Year	Canada	Ontario
1986 - 1987	418,278	165,655
1987 - 1988	427,807	170,665
1988 - 1989	439,546	178,248
1989 - 1990	453,482	184,875
1990 - 1991	486,322	191,901

Source: Education in Canada, Statistics Canada, Cat. 81-229 Annual.

Clearly other things have been changing in ways that have been more than offsetting real tuition increases. These influences, moreover, are likely to continue. Among the most important of them are the increases in the rates of return to education. Private rates have been increasing sharply since 1980 and are now approaching the "high" level of the 1960s.[21] Student enrolment, it seems, is much more responsive to changes in private rates of return (in terms of increases in expected life-time incomes) than they are to changes in tuition levels. The decrease in private rates of return in the 1970s led to declines in enrolments or a significant slowing down of enrolment growth. "Since then, enrolment has increased more quickly, especially in the programs with the higher expected returns. Furthermore, the recent high enrolment of female students may be attributed in part to the higher expected rate of return for women than for men in most programs."[22]

One example of the growing private payoff to university education is the striking employment record of graduates compared with non-graduates during the recent recession. A recent Statistics Canada assessment of the job market found that there were actually more jobs available for people with a university degree or some other kind of post-secondary education during the recession years between 1990 and 1993. In contrast there was a precipitous decline in jobs open during this period for those whose highest level of education was a high school diploma or less.[23] Between December 1990 and December 1992, total employment fell by 0.8 per cent in Canada, or a reduction of about 100,000 jobs. Meanwhile, the number of university graduates who found work grew by 13.3 per cent or 245,000 people to almost

[21] David Stager, Focus on Fees, Council of Ontario Universities, 1989, p. 73.

[22] Stager, op. cit. p. 77.

[23] Philip Cross, "The Labour Market: Year-end Review", Canadian Economic Observer, Statistics Canada, pp. 4.1 to 4.24, February 1993.

Tuition Fees at Canadian Universities

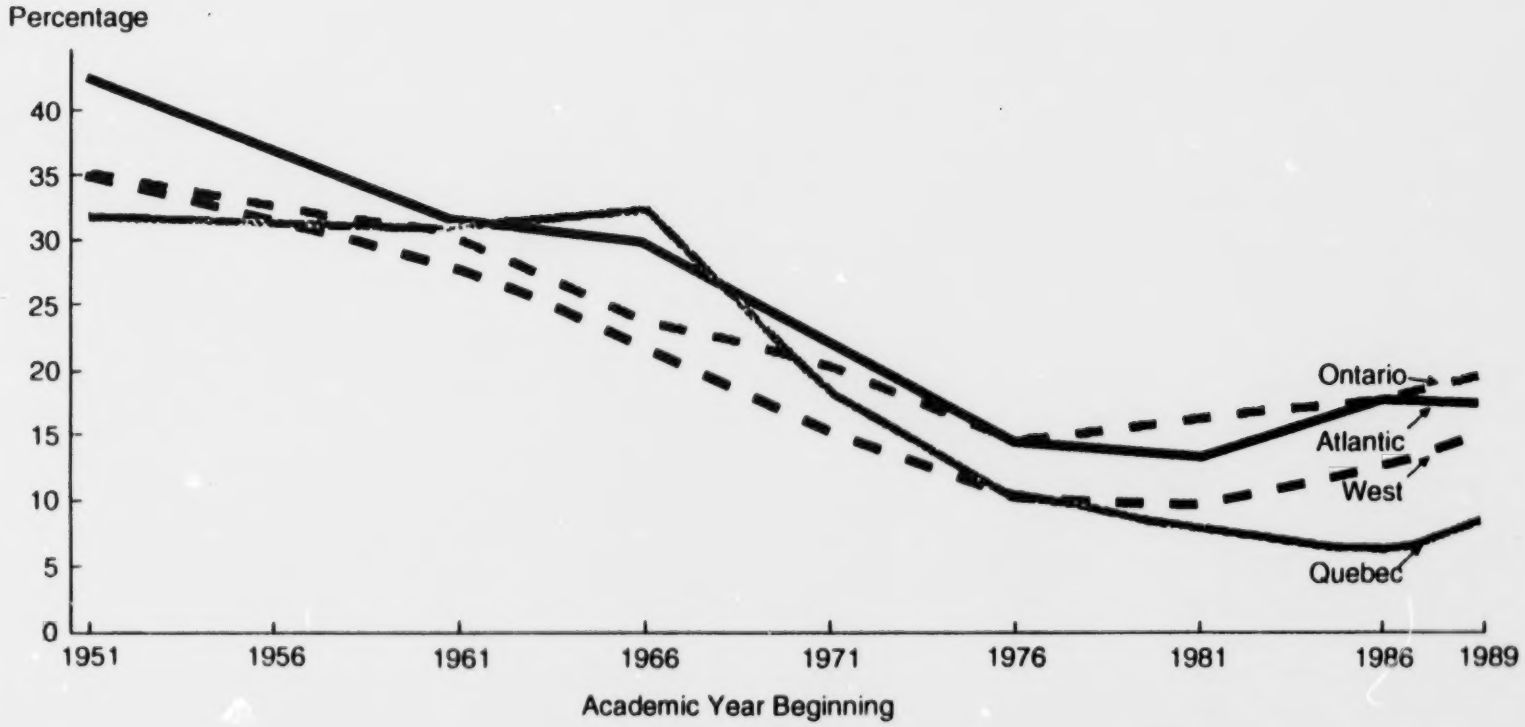

Figure 2 Tuition Fee Revenue as a Percentage of Total Operating Revenue (Excluding Assisted Research) in Canadian Universities, by Region, 1951-1989

Sources: Statistics Canada, Financial Statistics of Education
CAUBO, Financial Statistics of Universities and Colleges.

This diagram is an updated version of Figure 3.10 in David A.A. Stager, Focus on Fees Council of Ontario Universities, 1989.

Reprinted from Steven T. Easton (ed.), Ending the Squeeze on Universities (Montreal: IRPP, 1993), pp. 28, 34. Used by permission.

2.1 million. At the same time, employment for those with high school diplomas or less fell by 13.2 per cent or 416,000 people to about 2.7 million.[24]

Even if private rates of return were not increasing there could well be other simultaneous events that could increase enrolments and so offset, or more than counter, the negative effects of tuition increases. As already shown, the introduction of an income contingent loan system is likely to bring new entrants to universities. The reason is that this innovation would end the current rationing of access to Canadian student loans that is associated with the current operation of means testing.

The Optimal Shares of Tuition and Government Funding by Grants

So far the discussion has (a) focused on feasible reforms to student lending and (b) demonstrated that the same reforms will better enable students to face the trend of increasing tuition. The question of what is the optimum share of tuition and government provision has not been addressed because it is extremely difficult, if not impossible, for the economist to answer. To explain why, it will be necessary to resort to some simple analysis using diagrams. In case the following is too technical for some readers, however, it will be helpful to attempt to explain first, and in non-technical language, a broad outline of the kind of theoretical reasoning about to be advanced. The economics literature recognizes two major parties that are "in the market for", or generate a demand for, higher education. The first consists of students who are motivated primarily by the desire to increase their expected lifetime incomes. Taking a university course is viewed as an investment. The greater the expected pay-off from the resultant "human capital" that is created, the greater the willingness of the individual student/investors, given an efficient loan system, to pay for tuition.

The second interested party consists of members of the public at large who, even if they do not personally use the institutions of higher education, perceive eventual "spillover" benefits (externalities) to themselves from individuals who obtain university degrees and college diplomas. This second party uses government to represent its demands.

The determination of the appropriate share of the costs of education to by payed by each party at any one time is the result of an interaction of the different "intensities" of demand expressed by each. But since these relative intensities vary over time, so do the relative shares of payments. Evidence (quoted below) has, in fact, been mounting over the past decade showing an increase in the relative intensity of private (student) demand compared with public (government) demand. The latest interaction of the two demands

[24] Bruce Little, "Education Key to Getting and Keeping a Job", The Globe and Mail, February 22, 1993, p. B.3.

therefore appears to be calling for an increase in the student contributions relative to that of government. This phenomenon, moreover, is not confined to Canada but appears to be world-wide.

The more technical treatment of these issues proceeds as follows: The traditional study of public finance assumes there is a joint supply situation in higher education. A given unit of education supplies private benefits to the individual in the form of income enhancement while simultaneously supplying external benefits. The purely private demand is illustrated as Dp in Figure 3. Assume that the marginal cost of education is equal to the average cost and is represented by MC in Figure 3. In the absence of government intervention the amount demanded and supplied will be Qo. This quantity is determined by the intersection of the private demand curve Dp with MC.

The second demand curve, represented in Figure 3 as Dg, relates to the demand for external or public benefits that are assumed to flow from higher education. Although occurring simultaneously with private benefits, these social (external benefits) are different in kind from the private benefits as can be seen from the illustrations already provided in a previous section. And because the externalities represent <u>different</u> benefits, the true aggregate or comprehensive benefit from higher education is a summation of the two types - private plus external benefits. The geometric solution calls accordingly for a vertical addition of Dp and Dg. This produces the aggregate benefit curve ΣD in Figure 3. (Its vertical intercept F is obtained by adding OD to OE). The socially optimum quantity of education is then determined where ΣD intersects MC. As drawn, this optimum quantity will be Qs which is well beyond the purely private equilibrium of Qo. If the beneficiaries were charged according to their marginal benefit, students would pay QsA per unit of education, while government would pay MC - QsA or QsB. As the figure is constructed the proportions look to be around 20 per cent of marginal cost paid for by the private beneficiary (student) and the remainder by government.

Following this analytic procedure we can readily see why economists are unable by themselves to determine the optimum cost shares between students and government. To do this they need the fullest information on the government's demand curve Dg. But, as explained, this curve is based on the existence of assumed external benefits of a given value. Since, however, no reliable empirical measures of external benefits exist, some representative must presumably exercise his/her own subjective judgment concerning their value and existence and the position and shape of curve Dg. In practice this responsibility falls on the elected politician, and his/her judgment is not likely to coincide with that of the typical economist even if the latter was to venture to make it (without the evidence).

But while the economist is unable to prescribe the appropriate cost shares between government and students, it is possible for him/her to use the above simple geometry to explain the current upward trend in tuition. Suppose for some reason that there is an increase in the student demand for education while the government's demand (for external benefits) remains constant. The result will be a shift to the right of the demand curve Dp in Figure 3. In Figure 4 Dp has been shifted so far to the right that it now

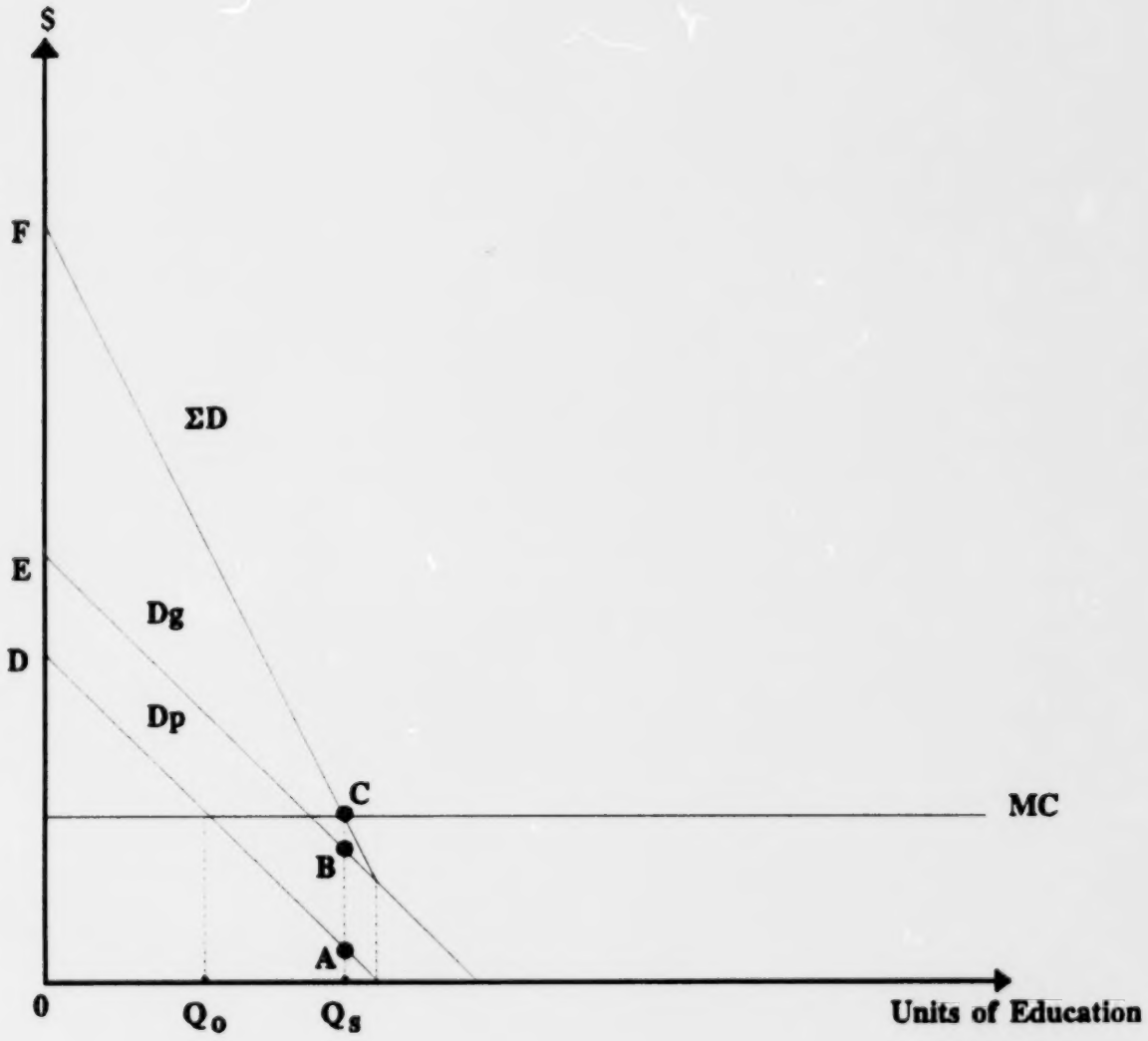

Figure 3

coincides with (or overlaps) the original Dg (which has remained constant as in Figure 3). Because a higher Dp curve is vertically added to a constant Dg curve the new aggregate curve also shifts to the right and appears in Figure 4 as $\Sigma D'$. Its intersection with the (constant) MC curve at C determines an expansion of education to Q's (i.e. Q's in Figure 4 > Qs in Figure 3). Charging as before according to marginal benefit, the students pay Q'sA which, as drawn in Figure 4, is now approximately 50 per cent of MC. The government, meanwhile, pays the remaining 50 per cent. The increase in the student demand curve is thus itself responsible for the increase in the proportion of costs paid by students. (The increase is from about 20 per cent in Figure 3 to about 50 per cent in Figure 4.) Another way of looking at these figures is to observe that they show a significant expansion of enrolment (from Qs in Figure 3 to Q's in Figure 4) at a time of increasing tuition.

The question now is whether this sequence of geometric events has any real world counterpart. There is, in fact, strong evidence that it does. First, as our Table V reveals, there has been a steady expansion in enrolment over the last six years despite the significant increases in real tuition levels over the same period. It should be noticed that the enrolment increase has come from a bigger proportion of 18 - 24 year olds participating in higher education.

Second, reference has already been made to the jump in private rates of return from investment in higher education. Just as there will be growth in investment demand for a particular kind of physical capital when its profitability noticeably increases, so we can predict a similar consequence in the area of human capital.

Third, the demand for higher education qualifications must have been stimulated by the evidence of the 1990s (referred to previously) showing that these attainments are associated with much smaller unemployment rates when compared with individuals who do not possess them. This third point can, of course, be merged with the second since, other things equal, a lower unemployment experience translates into a larger payoff in terms of lifetime expected income.

The fourth point takes into account the fact that demand curves are a function of disposable income, or, in the case of the provincial government, disposable revenues. Reduction in income/revenues can be expected to shift the relevant demand curve downwards (to the left). It is well known how most provincial governments have suffered substantial reductions in tax revenues at the same time that there have appeared new competitors for government funds. In terms of the diagrams, the expected result is a shift of Dg to the left while at the same time Dp is shifting to the right. This point only reinforces the effects of raising student contributions and lowering those of governments.

The trend of tuition increases seems firmly established and can be expected to continue indefinitely. A potential problem is that if the Dg curve shift to the left is stronger than the rightward shift of Dp, then ultimately enrolments will have to decline. The decline will come earlier in those provinces that already

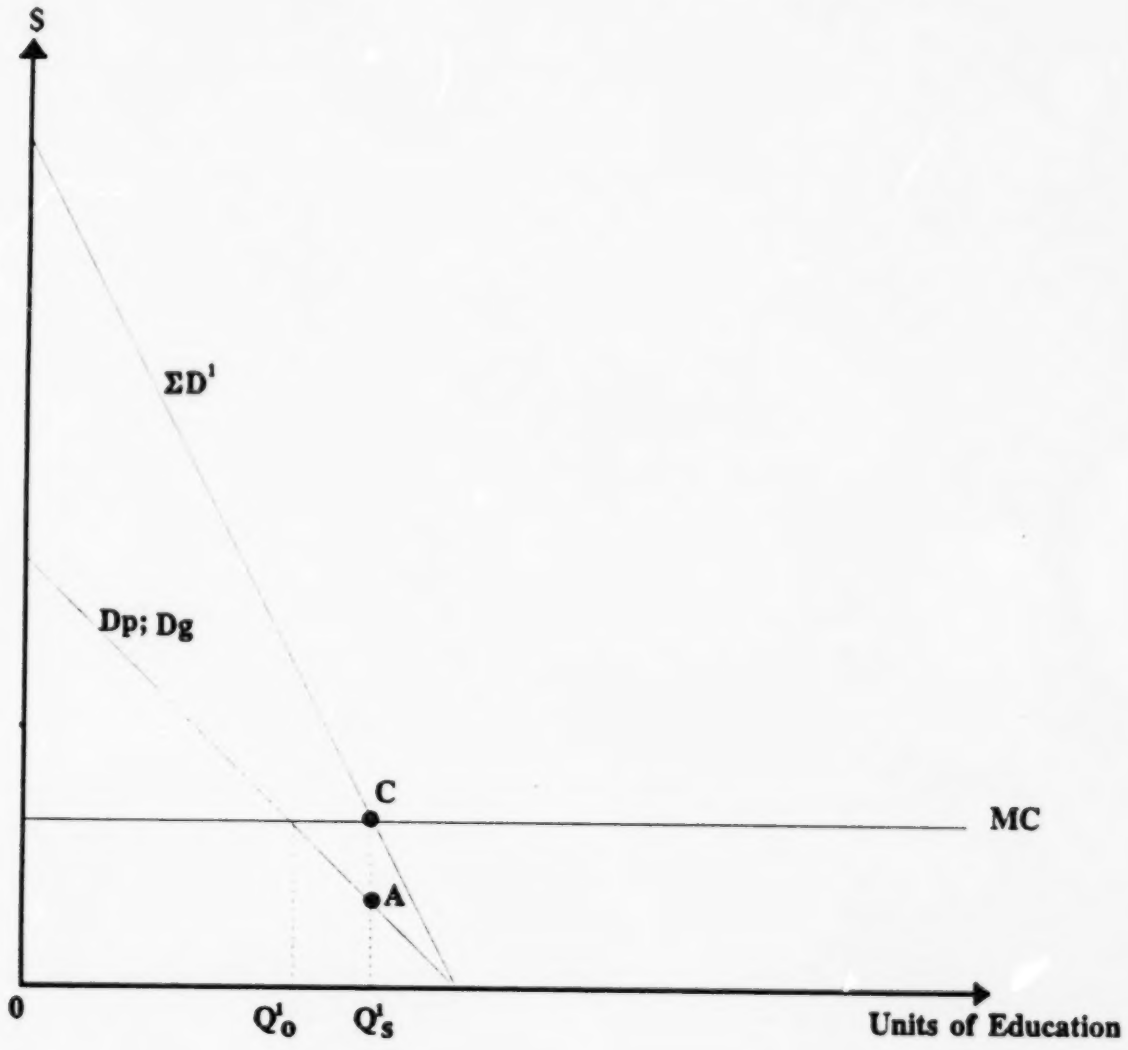

Figure 4

set limits on the total number of students they will fund. The forced reduction of the undergraduate intake, despite increased willingness to enrol, is now commonplace at several institutions in Ontario. But the situation here is aggravated by the fact that the universities do not have the freedom to set tuition fees. If they did have that freedom the inequality between demand and supply of places would dissolve as tuition increased still further. Meanwhile the mere presence of unsatisfied demanders of education, in the form of willing but frustrated buyers, leads to political tensions that call for their own resolutions sooner or later.

So much for the technical analysis. One thing it has demonstrated is the impossibility of obtaining precise answers from economists on the subject of the optimum cost shares of higher education via tuition and government funding. Relevant public finance theory, however, has been used to help explain, if not predict, the continuation of the trend of strong increases in tuition over time. This point being more thoroughly established, the search for an improved student loan system, outlined earlier, takes on fresh urgency. It is now time to review some practical considerations in implementing the reforms previously suggested. The best way to do this is to report on the very recent experiences of Australia and New Zealand.

PART III
AUSTRALASIAN EXPERIENCE

(a) The Australian Contingent Repayment Loans Scheme

Australia experimented in the 1970s with completely free university education. The announced objective was to improve the socio-economic composition of the undergraduate enrolment. Eventually, however, investigators concluded that the abolition of fees had not led to any dramatic increase in participation of minority groups.[25]

In January 1989 the government introduced the Higher Education Contribution Scheme (HEC). The scheme consists of a charge which each student is liable to pay towards the cost of study. In 1989 it amounted to $1,800 for a full-time equivalent course or $900 for each full-time semester.[26]

A student is now able to choose between two options for paying the charge. He can pay it to the institution at the time of enrolment or re-enrolment or he may opt to pay later through the taxation system when earning an income.

Australia, therefore, has taken the crucial step of using the income tax machinery as a part of its student loan system. Those students who defer payment until earning an income will eventually make payments through the Australian tax office automatically when the individual's income reaches $22,000. The office will stop collecting the payment if taxable income falls below $22,000 and/or when the liability has been paid. An indexing process will be applied to the debt to ensure that the amount the student is required to repay will stay constant in real terms. At the threshold income of $22,000 dollars, payment will begin at 1 per cent of taxable income and this percentage will increase as income increases. Thus at $25,000 the rate increases to 2 per cent and at $35,000 it becomes 3 per cent.

If a student opts to pay later through the taxation system, he/she must provide the educational institution with his/her tax file number or with an application for such a number, which the institution will forward

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[25] D.S. Anderson et al Students in Australian Higher Education: A Study of their Social Composition since the Abolition of Fees, Canberra: Australian Government Publishing Service, 1980.

[26] The Australian dollar has recently been exchanging for about 87 cents Canadian. The Details of the Australian HEC Scheme have been obtained from "Letter from the Australian Government to Students in Postsecondary Education Concerning the Higher Education Contributions Scheme", Minister for Employment, Education and Training, Parliament House, Canberra ACT. 2600, 31 October 1988.

to the Australian Taxation Office. The privacy of each student's taxation information, including the tax file number, is guaranteed.

Criticisms of the Australian Version

Despite the extent of the reforms to date some problems still remain. In particular some confusion between a loan and a subsidy still persists. The total amount of revenue collected from students from the HEC program is supposed to represent about 20 per cent of the estimated costs of per capita higher education. It is recognized that the other 80 per cent consists of subsidies of different forms. The stated rationale of the loan system is to enable the students to pay the balance. Inconsistency occurs, however, when part of the loan repayments are "excused" for some reason or another. The most conspicuous instance of this is the fact that real interest is not paid on the imputed value of an outstanding loan under the HEC scheme. It is true that a student's debt is adjusted upwards periodically because of indexing for inflation. But to do no more than this implies that the real interest rate is zero. The taxpayers' money that funds the HEC loans would enjoy a positive rate of interest if invested elsewhere. To deprive the taxpayer/lenders of real interest forces them, in effect, to subsidize the student borrowers, and the confusion between a loan and a subsidy becomes manifest. This subsidy moreover will encourage the wrong incentives among students. The longer they postpone earning an income at the threshold level and above, the longer they will enjoy a loan that is free of real interest. The system will thus encourage some students to lengthen the period of their education unnecessarily and to be in less haste to obtain initial employment.

Another feature of the Australian system is that the HEC appears as a uniform fee as distinct from a program-differentiated tuition fee. For this reason the Australian system is better described as a graduate tax rather than an income contingent loan. Where program-differentiated fees are charged (as in New Zealand), students proposing to enrol in particularly expensive courses will have the incentive to consider their investment more closely because of the higher fee charged and therefore the greater the amount of loan undertaken. Differentiated tuition fees are also to be preferred on grounds of equity.

It is true that there is some variation built in to loan repayments under the HEC program. Students who quickly earn above $35,000 pay 3 per cent of their income in loan repayment compared with only 1 per cent for those earning between $22,000 and $25,000. Such variation, however, does nothing to correct for the absence of real interest charges, a situation that benefits all students. And this benefit is progressive (i.e., pro rich) since the student undertaking the more expensive course, say in medicine or dentistry, is implicitly escaping interest on a larger than average education investment.

Overall Assessment

Even allowing for the omission of real interest charges, the Australian system appears on the whole to be superior to that in Canada. This is because first, the idea of using the income tax authorities has been fully embraced, and second because, despite some arbitrariness in the calculations of rate payments, the income contingency principle has been largely accepted. Because both the above features have been adopted, Australia will have freed itself from the expensive use of collection agencies and from the costly system of relying upon banks to do the monitoring and collection of loans.

The latest available annual examination of the impact of Australia's HEC scheme reports that it has had no adverse impact on participation in higher education and there has been no turning away of those students typically under-represented in higher education.[27] Enrolments in fact have continued to rise significantly. As for the administration of the scheme both institutions and students appear to be reasonably happy with the organization. "Student enquiries to the HECs hotline have dropped significantly and there seems to be a greater understanding of the scheme among students."[28] About 85 per cent of Australia's university students are now liable under the scheme. Moreover, "surveys indicate that more than half of the students graduating would be liable to pay the tuition tax in their first year at work."[29]

(b) The New Zealand Plan (1992)

Under the Student Loan Scheme that became available in New Zealand in 1992 we can see in practice all the major features of the income contingent principle that have been outlined. The scheme provides loans which can cover (a) the compulsory fees that are payable by students at enrolment, (b) course-related costs (to a maximum amount of NZ $1,000 a year for full-time) to assist with such items as equipment, textbooks, and field trips, (c) a living allowance up to a maximum amount of NZ $4,500 a year.[30] Repayment and servicing of loans is through the Inland Revenue Department (IRD), the level of repayments being based upon taxable income. Unlike Australia, and more in line with the income contingency principle, students have to pay positive real interest on their loans.

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[27] Higher Education Council Media Release, 13th April 1992.

[28] Ibid.

[29] Geoff Maslen, "Trusty way to make money", Times Higher Education Supplement, January 22, 1993, page 11.

[30] The New Zealand dollar has been exchanging recently for about 65 cents Canadian.

Eligibility

Students are eligible for a loan under the student loan scheme if they are citizens of New Zealand and they are undertaking approved courses. In addition they have to demonstrate an acceptable academic record. These provisions are similar, of course, to those in Canada covering the issuance of Certificates of Eligibility in the CSLP. If New Zealand students are applying for a loan during or after their third year of post secondary education, they must have passed at least half of their program to date. In general the academic requirements mean that if a student requires loans to undertake his studies he must keep up an acceptable pass rate to continue to qualify for any further loans he will need in later years of study. Any student in his third or later year of study who is moving to a different tertiary institution must supply the latest details of his academic record. These include examination result slips or a verified copy of the academic record for the last two years of study. The amounts that students are eligible to borrow, meanwhile, depend on whether they are studying at a Tertiary institution or a private training establishment, and whether they are studying full-time or part-time.

In completing the application form the student must include not only his registration number, date of birth, citizenship/residency status, permanent and term address, but also his bank account details and his IRD number. The utmost care and privacy is exercised in handling this latter information. The student must provide written confirmation of his IRD number, such as a photocopy of a tax form with his number pre-printed on it, or a letter from the IRD.

If a student meets the eligibility requirement, he is entitled to a loan up to the maximum amount permitted under the scheme. And, again consistent with the income contingency loan principle, there are no limitations related to the parents' income.

Administration

The agent of the government that operates loan accounts for New Zealand students is known as The Student Loan Manager. For the 1992 to 1994 academic years, the agent will be Student Loans Management Limited, a wholly-owned subsidiary of BNZ Finance. Once informed of the entitlement of a student to a loan, the Student Loan Manager will set up a loan account for him. The manager will also provide information to the student about how to operate his account. All drawings upon the loan will be paid to the student's designated bank account. The Student Loan Manager will provide the student, at least three times a year, with a statement of how his/her loan accounts stands. The student can also request a statement at any time during the year by dialling a freephone number.

Immediately following the end of the student's course, his/her loan account will be transferred by The Student Loan Manager to the IRD. From then on repayments towards the amount of the loan must be

made to the IRD, either direct or through the tax system. Once a student loan has been taken out, the recipient is required to file a tax return for every tax year until the loan has been repaid and regardless of the amount of income earned. Failure to make repayments by the due date set by the Income Tax Authority will result in late payment charges of 2 per cent per month being applied. Any evasion of repayment will incur a penalty of three times the amount evaded. Continued default could result in the loan being called up for immediate repayment in full.

Repayment of the loan will begin once the student's annual earnings (plus other income) is more than NZ $12,670 in any year. Repayment is at the rate of ten cents in the dollar for every dollar over the threshold amount. Thus if a student enjoys an income of $32,670 "forever" soon after graduating, he/she pays $2000 per year until his/her loan is all paid off. If the loan was $10,000 he/she would finish paying in 6 or 7 years depending on the rate of interest charged.

Overall Assessment

It will be seen that the basic thrust of the New Zealand legislation respects all the components of the classic income contingency model. These include the use of the income tax machinery for monitoring and repayment of the loan, and the repayment to the government of a given percentage of earnings in excess of a specified sum. The New Zealand system also meets the contingency model's guarantee that a low income student will escape repayment altogether. To do this, of course, the individual would have to earn less than New Zealand's declared threshold level of income and less than the successive thresholds announced as time goes on.

There is no statement about calculations to determine whether the program will be self-financing, calculations such as ours presented in Part IV below, but presumably some thought has been given to this issue. Self- financing by the student class as a whole will occur, of course, if the dollar amounts from the repayers are more than sufficient to cover the failures to repay by the minority that eventually falls below the threshold income. This outcome can be attained if the government charges students a lending rate that is somewhat in excess of its own borrowing rate, and bearing in mind that borrowing rates facing governments are normally much lower than those facing individuals in the private capital market. Notice finally that interest payments on loans outstanding are charged at compound interest, not simple interest as in Canada.

One additional and pertinent feature of the New Zealand situation is that fees at universities have been deregulated. Each individual institution can determine its own charges. Some universities have already greatly increased the fees of courses that are expensive to operate relative to others. This is the kind of reform that the Macdonald Commission recommended for Canada (see Part II above).

PART IV
RESTRUCTURING ONTARIO'S LOAN SYSTEM: SOME EMPIRICAL EXPLORATIONS

This Report has argued that a shift to the income tax machinery for loan collection purposes requires hardly any further research to justify it. The savings from this policy reform should be appreciable and immediate. The introduction of the income contingency principle, on the other hand, would best be accompanied by further work in estimating probable magnitudes. Such calculation will recognize the interdependence of three key parameters: (1) the threshold income (above which repayment is called for), (2) the annual repayment required, (3) the lending rate to be charged by government. Other variables include the expected dropout rates, enrolment eligibility by program and gender, the government's borrowing rate, and the real growth rate.

Some useful simulations have already been done in this area. Recent work by Stager and Derkach, for instance, has produced approximate calculations based on the following three assumptions: (a) a threshold income equal to the labour force average, (b) an annual repayment rate of 3 per cent of taxable income, (c) adjustment of the outstanding principal amount by the rate of wage inflation. Using data from the 1986 census, the authors venture the tentative conclusion that if the amount borrowed covered the tuition fee for four years, repayment could be completed in about eight years by the average adult male graduate in Ontario. If the student borrowed additional funds to cover books, accommodation, travel etc, repayment would be completed when the individual was in his mid-forties (i.e. in about twenty years). Altering the repayment rate to 4 per cent of taxable income would shorten the repayment period to about 6 and 16 years in these examples.[31]

It must be emphasized, however, that these calculations apparently assume that the student will be charged a zero or very low real rate of interest. Simply adjusting for inflation, (as Stager and Derkach point out), does not produce a positive interest rate. Incorporating an appropriate interest level to make the income contingent plan self financing will, of course, lengthen the repayment periods just quoted. Estimating the precise level of this required rate is itself a considerable challenge and it is more than likely that an approach to it will be obtained only after some trial and error. Applying the appropriate real rate of interest, plus the principle of compounding, might result in non-participation in the plan by some students. On the other hand the abolition of means testing will allow other students to borrow who were previously prevented. One can expect that the number dropping out from the loan system will not be substantial. The reason is based on the observation that "Since there would normally be a gap of at least

[31] Contingent Repayment Student Assistance Plans, prepared by David Stager and Dan Derkach, Council of Ontario Universities, March 1992, page 10.

five percentage points between the rate at which the fund [Government] could borrow and the rate on personal loans, there is a significant range within which the fund could charge a rate greater than its borrowing rate yet offer a rate that would be less than the rate available to student borrowers at other lending institutions".[32] The evidence, finally, from the Australian scheme seems pertinent. As reported above, experience shows that enrolments have been rising following the introduction of the HEC scheme.

The Stager/Derkach Model

The analysis that follows takes advantage of the useful computer simulation model provided by Stager and Derkach (hereafter S/D). An example of one conclusion of theirs from their model, and based on their own selected assumptions, has already been quoted (above). The authors, however, invite their readers to experiment with other assumptions, or what they term "policy default values". The main difference in our own switch in the selection of these values is that we assume a higher rate of interest chargeable to the students. This, to reiterate, is a necessary condition to make the lending program break even. For, as emphasized earlier, the charging "too low" an interest, bestows a subsidy on the student; and we maintain that loans and subsidies should be kept separate. We are not arguing against the principle of government subsidization, only that the government subsidies be confined exclusively to the non-tuition part of the costs such as government funded university buildings and faculty costs.

The S/D program models the outflow of funds from a loan agency or fund administrator, and the inflow of funds (e.g. interest payments amortisation) from students to the agency. Student financial flows are treated in terms of cohorts. A cohort is the total enrolment entering universities in the first academic year. Expected inflows or payments from students, once employed, are based on the estimated annual income of students. This, in turn, uses the information contained in our Table III referred to earlier in this Report. In keeping with the income contingent nature of the loan program, the student payments begin only after some designated income threshold is reached. The S/D program assumes this threshold to be the median Canadian adult income. The total inflows (payments) also depend on the number of years over which payments are required or the repayment period. The number of participants making expected payments in future years is adjusted for mortality and labour force participation rates.

The annual outflows of funds from the agency are derived by multiplying the number of participating students by the advances available for each particular program. These advances are accumulated and increased by compound annual interest to calculate the accumulated debt. The Net Debt outstanding is calculated as the aggregated annual payments from students minus the aggregate payments forgiven. To come close to obtaining a total loan program that is self-financing, the objective will be to generate a Net Debt that is close to zero.

[32]Stager and Derkach, op. cit. page 8.

This brief description of the S/D model will suffice to set the scene for the presentation of our results which are based on our own selection of "default values". The full details of the model, meanwhile, are available in Stager and Derkach op. cit., 1992.

Unless otherwise stated, the "default assumptions" of the S/D model to be applied are as follows:

- Value of advances for each program are set equal to actual 1991-92 tuition fees.
- Real interest rate on advances to students is 1.0%. Rate at which fund borrows is 3.0% real. This implies an interest subsidy of 2.0%. This is the special S/D assumption and it will be altered subsequently to meet our own requirements.
- Repayment begins when a student/graduate's total employment income reaches $21,402 -the median income in 1990 dollars for all Ontario taxpayers in 1989 - a taxable income of $20,118. Again this assumption is special to S/D and will be altered in due course.
- Repayment is based on taxable income, with the percentage of taxable income to be paid increasing with income.
- Maximum payback period is 25 years. This assumption will be suspended subsequently.
- Real growth rate for monetary values (advances, incomes, income threshold, income brackets) is zero.
- Enrolment data based on full-time enrolment for the total Ontario university system for Fall 1990 provided by the Ministry of Colleges and Universities.

Simulation Results

The model is used to estimate the financial viability of an income contingent loan program for a single cohort of students in terms of the government's cost of forgiven debt for the cohort, the negative interest subsidy they generate, and the final fund balance under alternative data assumptions and policy options.

The S/D model's default assumptions, as we have seen, includes a positive interest subsidy simulation. The fund borrows at 3.0 per cent and students are charged 1.0 per cent. This implies a 2.0 per cent interest subsidy from the government to the fund. However, income contingent loan theory, to repeat, is predicated on the system being self-financing. Student-borrowers, accordingly, must be charged a rate over the fund borrowing rate such that the net returns from the "winning investments" in human capital are just offset by the net wastage of the "losing investments". In other words, the borrowers who manage to repay their loans contribute to a cumulative "negative interest subsidy" which balances the "forgiveness" required by borrowers who are unable to repay any or all of their debt. By adjusting the model's parameters of interest rates, repayment periods, threshold income level and repayment rates, the objective is to balance the negative subsidy and forgiveness elements.

The values of advances to students are based on actual tuition charged for each program at Ontario universities (1991-2) plus estimated direct expenses. These estimates are derived from the ratio of total

tuition fees to total tuition plus direct academic expenses (i.e. books, accommodation, travel) for full-time undergraduates in Ontario, based on 1989-90 data.

TABLE VI

Tuition and estimates of tuition plus direct expenses for selected programs at Ontario universities, 1991-92

Program	Tuition	Tuition + Direct Expenses
	$	$
Arts and Sciences	1,770	5,664
Law	1,770	5,664
Engineering/Architecture	1,920	6,144
Medicine/Dentistry	2,250	7,200
Other Programs	1,770	5,664

Table VII presents simulation results for 1 cohort of student-borrowers based on the following default values:

i)	Real interest rate charged to students	7.0%
ii)	Real borrowing rate for the fund	5.0%
iii)	Real rate of monetary growth	2.5%
iv)	Income threshold	$20,118
v)	Repayment as a proportion of income over the threshold	6.0% for all incomes
vi)	Maximum repayment period	25 years

Simulations test the effect of changes in the value of a single variable while holding all other parameter values constant. For instance, suppose we change the default value of 25 years for repayment to 20 years (item vi above). The program then calculates the new outcome but leaves the other default values the same, so that the real interest charged to students, for example, remains at 7 per cent and the fund's real borrowing rate at 5 per cent and so on.

From Table VII we see that, departing from default value of 25 years for repayment and keeping other variables the same, we witness variations in the size of the net debt. Thus when we drop the period from 25 years to 20 years, the amount forgiven increases from about $693 million to about $826 million. The amount of "negative subsidy" earned from the winning investments, however, falls from $623 million to $546 million. The amount of forgiveness being now so much more ahead of the negative subsidy, the system experiences a jump in net debt from about $70 million to $279 million. The size of the net debt

also increases as we go to a 30 year repayment period. Of the three repayment periods posited in Table VII, therefore, 25 years is the most preferred. (The optimum period looks to be something slightly more than 25 years for in this range the net debt will approach zero.)

TABLE VII

Stager/Derkach Simulation Model: selected sensitivity results.

Run	Test Variable	Forgiveness	Negative Subsidy	Net Debt of the Fund
	Repayment Period	$ millions	$ millions	$ millions
1	20	825.71	546.44	(279.27)
2	25	693.09	623.42	(69.67)
3	30	557.50	685.73	128.23
	Student Interest Rate			
4	5.0	36.19	0.00	(36.19)
5	6.0	267.93	250.27	(17.66)
6	7.0	693.09	623.42	(69.67)
7	8.0	1,348.23	1,175.50	(172.73)
	Income Threshold			
8	18,000	473.92	566.69	92.77
9	19,000	580.61	596.83	16.22
10	20,118	693.09	623.42	(69.67)

If we now vary the student interest rate and keep all other default variables constant it transpires that the real rate of 6 per cent is the most preferred since it produces the lowest net debt (of $17.66 millions). This is fairly close to the 7 per cent real rate that we earlier conjectured to be the most appropriate.

With respect to the taxable income threshold, it turns out that the choice of $19,000 is the best option. This is lower than that of the median income that is used in the S/D model. As it happens it is arguable that the latter is too high. It has been observed (above) that the main rationale of the whole threshold idea is to provide some kind of insurance for those who withdraw from the labour force for certain periods of time, and this applies particularly to women. Since the income of women is lower than that of men, we require a median that gives special weight to the female component. The resultant adjustment would, therefore, produce a figure lower than the median used in the S/D model which relates to an unweighted figure of male and female incomes.

To repeat the preliminary findings: an unsubsidized income contingent loan system, with loans covering both tuition and living expenses, could best work (and approach self-financing) when the maximum repayment period is about 25 years, the real interest rate chargeable to students is 6 per cent and the taxable income threshold is around $19,000 which is close to the median of adults whose highest education is represented by a high school diploma. Selecting each of these parameter values has the effect of lowering the net debt. But although going in the right direction, the end result is typically some positive cost to the fund.

The next experiment that suggests itself is to apply all of the three favoured values simultaneously so that the model assumes 25 years repayment maximum, a 6 per cent interest charge on students and an income threshold of $19,000, all other default variables remaining constant. The expectation is that all three "favoured" variables reinforce each other. The result of such an experiment is most encouraging. The outcome is a forgiveness magnitude of $211.58 million and this is below the negative subsidy figure of $239.22 million. Thus for the first time the fund is placed in the black, and by the relatively small sum of $27.64 million.

It should be noticed that our default value of 25 years is the maximum period of repayment. Most students will repay in a shorter time span. Thus the program predicts that 3 year Arts and Science males will take 15 years to repay. So, for instance, a young male entering university at 19 years and graduating at 22 years will have repaid his loan by the time he is 37. (The time period for 4 year males is 17 years.)

It is not being suggested that the above calculations offer the greatest precision and are the last word. Clearly the pattern of incomes could well have changed in 1993 compared with those of our model period. Also the model assumes 100 per cent participation by students. A smaller participation rate could affect outcomes, but not necessarily. Nevertheless, the experiment does throw attention on the variables that are likely to be key. And since no better ones are available, the above estimates could well inform the initial design of the program and suggest a strategy for later modification of variables.

CONCLUSIONS

Demand for places at universities is expanding in most parts of the world at a time when the abilities of governments to provide the needed financial support have become attenuated by deficits, over-commitments, and political interest group pressure for spending on alternative programs. If the quality of education is not to fall further, new sources of finance must be developed. One of these, student fees, has been rising in real terms nearly everywhere. Tuitions in the U.S., for instance, have for the last 20 years been rising at an average annual rate that has exceeded the rate of inflation by 2.1 percentage points. In Britain, tuition increases threaten to become even more substantial. The London School of Economics, for instance, is considering raising its undergraduate fees by £1000 per student in 1994.

The most dramatic case of all is that of Australia. Tuition fees (or their equivalent HECs) there went from zero to Aus. $2,328 between 1989 and 1992. The main stated purpose, moreover, was to allow Australian universities to expand their enrolment. In fact it did so expand by 120,000 students (or 30 per cent) over the same period, despite warnings that enrolment would drop. The huge increase in Australia's tertiary enrolments, therefore, has been financed in considerable part by the students themselves. And this accomplishment is due mainly to the deferred payment system incorporated via Australia's new income contingent (or more strictly, its new graduate tax) system.

The upward pressure on fees everywhere has called for new and imaginative ways of helping students finance themselves. With this in mind, most countries have already introduced, or are expanding, their loan systems. But those with fairly long experience with such systems have found that the default problem looms large especially where governments rely mainly on banks and special departments of quasi-public institutions to monitor or police the borrowers. And it is here where it can be said that a switch to the income tax machinery for collection purposes is a reform whose time has come.[33]

Even if fees were not increasing, the full incorporation of the tax machinery into the loan collection process would, by itself, substantially improve the operation of the Ontario Student Loan Program as it now stands. The additional step of introducing the principle of income contingent loans would also improve efficiency. One reason is that the new system would allow borrowers to spread their repayments over a longer period so as to accommodate fluctuations in their incomes. This would be a substantial

[33]In August 1993 Prime Minister Kim Campbell announced that Ottawa will reform the federal student loan program by boosting the annual ceiling on student loans form $3,500 to $5,100, "while stepping up pursuit of $1 billion in defaulted loans" (Globe and Mail, August 17th, 1993, page A4). Boosting the ceiling by itself, however, will do nothing to reduce, and might even worsen, the default rate. Meanwhile the intention of stepping up the pursuit of the defaulters is not spelled out. The intention may be simply to hire more collection agencies, in which case the extra costs may well outweigh the benefits.

improvement on the current OSLP which requires relatively large fixed payments at fixed intervals, a situation that could well be encouraging many students to default.

One final consideration relates to the question of jurisdiction. Suppose initially that only one province wants to initiate the full reforms outlined above. How practical would this be? It is surely quite feasible for the province in question to undertake a unilateral agreement with the federal income tax authority to act as its loan collector. Out-of-province residents receiving university education could then participate in the income contingent loan system because their repayments can be channelled through the central Canadian income tax system. It is easy to predict, meanwhile, that once one particular province undertakes the reforms described, others will quickly follow.

As for the future, the positive probability of continual tuition fee increases seems indisputable and this Report has given both theoretical and empirical material that appears to demonstrate this point. In the process, however, the phenomenon of unevenness in tuition charges has been observed. The policy adjustment that has suggested itself is a reform of fee structures according to the different cost of the various programs. Since, for instance, the cost of a medical education is likely to be at least twice that for an arts and science degree, above average increases in such professional fees in the future should be allowed until they offer a more accurate reflection of the relevant program costs.

The reform suggested in this Report could be conducted so as not to aggravate, but indeed probably to relieve, the present budgetary problems of governments. A reformed student loan system could, after all, allow students to tap much more private finance than before. And since the amounts and durations of loans can be expanded, Ontario can be better ensured of the ability to increase its stock of human capital still further and to the full extent that the demands of the new global economy are dictating.

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